

Cardiology revision

Enumerate :

1. Causes of diastolic heart failure :

Any condition that leads to stiffening of the left ventricle can lead to diastolic dysfunction

- a. **Hypertension .**
- b. Aortic stenosis.
- c. Hypertrophic cardiomyopathy.
- d. Old myocardial infarction (*scarred heart muscle*)
- e. Old age (*age alone causes stiffening of the ventricles*)
- f. DM (*stiffening occurs as a result of glycosylation of heart muscle*).
- g. Pericardial effusion , constrictive pericarditis.

2. Causes of left sided heart failure.

3. Causes of right ventricular failure.

4. Causes of acute pulmonary edema (cardiogenic & non-cardiogenic)

5. Framingham criteria for diagnosis of congestive heart failure.

6. Causes of dilated cardiomyopathy. 5 I EN

7. Complications of congestive heart failure

= *Complication of H.F*
CP. ع

- Renal failure.
- Liver cell failure : due to associated hepatitis C & cardiac cirrhosis.
- DVT & Pulmonary embolism.
- Valvular heart disease e.g. MR
- Cardiac cachexia especially with RSHF.
- Acute pulmonary edema.
- Stroke, syncope.
- Arrhythmias : atrial & ventricular.

8. Causes of acute heart failure

a) Acute :

- Myocardial infarction.
- Acute valvular regurge : e.g. acute MR due to MI or IE
- Rupture of interventricular septum.
- Hypertensive crisis
- Ventricular arrhythmias e.g. VT, VF
- Acute myocarditis.
- Acute massive pulmonary embolism
- Cardiac tamponade.

b) Acute on top of chronic : e.g. MS with aggravating factor as AF

9. Risk factors of atherosclerosis (coronary heart diseases) : 10

- ☞ 3 Non modifiable (سنه ، جنسه ، عياله)
- ☞ Hypertension
- ☞ 3 HYPER **GLU**cose (hyperglycemia , Hyperlipidemia , hyperurcemia)
- ☞ 3 S : Stress , Smoking , Sedentary life.

10. Causes of pulmonary hypertension.

11. Causes of secondary (curable) hypertension.

12. Complications of systemic hypertension.

13. Diagnostic (Duke's) criteria for the diagnosis of infective endocarditis

14. Causes of syncope. 🙋

15. Causes of postural hypotension (orthostatic syncope):

4 A (**A**utonomic neuropathy , **A**dison's , **A**lph blockers , **A**ge : old) +

weakness of the muscles of LL.

16. Causes of atrial fibrillation.

17.

Wells Prediction Rule for Diagnosing Pulmonary Embolism :

- Clinical signs of DVT : leg swelling & pain : 3 points
- No alternative diagnosis (e.g. an infiltrate on x-ray consistent with pneumonia) : 3 points
- Tachycardia (heart rate > 100) : 1.5 points
- Bedrest \geq 3 days, or surgery in last 4 weeks : 1.5 points
- History of DVT or PE : 1.5 points
- Hemoptysis : 1 points
- Cancer (treated within the last 6 m) : 1 points

Score > 4 : PE likely. Consider diagnostic imaging : **Spiral CT**, P. angiography...

Score \leq 4 : PE unlikely. Consider **D-dimer** to rule out PE. -ve d-dimer excludes PE

18. Causes of sinus bradycardia.

19. Causes of Premature beats (extrasystole)

20. Types of shock and their causes.

21. Cardiac causes of chest pain.

22. Causes of acute dyspnea with acute chest pain : MI & 6 p (P104)

23. Risk factors of DVT (pulmonary embolism) : **6 O** P102

Operative , Old age , Oncology , Oral contraceptive pills , Obesity , Others ☺ : 2C

(Congestive heart failure , Coagulation disorders e.g. protein C & S deficiency)

24. Causes of painless myocardial infarction.

25. Complications of myocardial infarction (Early & Late)

26. Presentations of ischemic heart diseases :

☒ Asymptomatic.

☒ Angina (stable , unstable)

☒ MI

☒ May also presented by one of the early complications of MI (.....)

27. **Most common causes of cardiac tamponade : 4 C**

Cancer , CRF , Cardiac injuries, Cryptogenic (idiopathic)

28. Causes of dry pericarditis : 7 I , 2R + Post cardiectomy syndrome.

29. Causes of pericardial effusion.

30. **Causes of heart failure with bradycardia :**

Myxedema, B blockers, Digitalis, heart block, uremia.

31. **Pathological causes of hyperdynamic circulation = causes of water hammer pulse = causes of capillary pulsation.**

○ Anemia.

○ A-V fistula

○ Cirrhosis

○ Thyrotoxicosis.

○ Gram-negative septicemia

○ Beri-Beri

32. **Cardiogenic sources of systemic emboli :**

✕ Mitral stenosis.

✕ Myocardial infarction.

✕ Myocardial aneurysm.

✕ Mitral valve prolapsed.

✕ Myxoma.

✕ Atrial fibrillation.

✕ Artificial valve.

✕ Infective endocarditis.

33. Causes of refractory heart failure.

34. **Endocrinal causes of hypertension.**

35. **Causes of isolated systolic hypertension :**

○ Atherosclerosis.

○ Thyrotoxicosis. ♪ ♪

○ Aortic regurg, PDA.

○ Increased stroke volume.

○ Complete heart block .

36. Non-atherosclerotic causes of myocardial infarction :

- ✖ Coronary artery diseases : spasm, dissection, PAN, Takayasu's disease.
- ✖ Coronary angiography.
- ✖ Aortic stenosis, regurge & prolonged hypotension.
- ✖ Polycythemia, Sickle cell anemia, DIC, TTP.
- ✖ Embolism : IE, Artificial valve, myxoma.

37. Poor prognostic factors in myocardial infarction :

I. Early :

- Persistent low BP
- Persistent tachycardia.
- Ventricular arrhythmia.
- Anterior MI with 2nd or 3rd degree heart block.
- Cardiac rupture.
- Cardiogenic shock.
- Old age.
- Previous MI.

II. Late :

- Recurrent angina. Myocardial aneurysm. - DM.

38. Cardiac indications of β blockers 6

39. Uses of diuretics in cardiac patients.

40. Indications , contraindications of anticoagulants :

Indications :

- ✖ DVT & pulmonary embolism. (therapeutic & prophylaxis in high risk patients)
- ✖ Atrial fibrillation.
- ✖ Valvular diseases : MS , artificial valve.
- ✖ Myocardial infarction : to prevent mural thrombi and DVT.
- ✖ Unstable angina.
- ✖ Prevention of stroke after TIAs.

Contraindications :

- Bleeding tendency e.g. liver diseases.
- Hemorrhagic stroke.
- Peptic ulcer.
- Pre & post operative.

41. Causes of chronic hypotension :*

- Severe reduction of COP
- Addison's disease.
- Malnutrition & cachexia.
- Chronic bed rest.
- Neurological disorders :

(interference with neural pathways between vasomotor centre & the efferent sympathetic nerve on the blood vessels.)

DS , Peripheral neuropathy , Syringomyelia , anti-sympathomimetics, spinal cord section, Syphilitic tabes dorsalis.

42. Drugs commonly used during cardiopulmonary resuscitation (CPR)*

- ✗ Epinephrine : It is used in all situations of arrest.
- ✗ Dopamine : It is used mainly cases with cardiogenic shock.
- ✗ Atropine : It is used mainly in cases with significant bradycardia.
- ✗ Antiarrhythmic drugs : according to the situations.

43. Causes of cardiogenic shock :***I. Myopathic :**

MI, myocarditis, cardiomyopathy, Ca channel blockers.

II. Mechanical : valvular (stenosis, regurge , Hypertrophic cardiomyopathy)**III. Arrhythmia : brady & tachycardia.**

44. Causes of myocarditis :*

- a) Idiopathic.
- b) Infection :
 - Viral : CMV, Coxsackie, influenza, HIV.
 - Bacteria : Streptococcus (rheumatic carditis), diphtheria (toxin-mediated heart block)
 - Parasitic : toxoplasma gondii.
 - Others : Spirochaetal (leptospirosis) , Fungal , Rickettsial.
- c) Drugs (hypersensitivity reaction) : methyldopa, penicillin, anti-TB
- d) Radiation : may cause myocarditis but pericarditis more common.
- e) Autoimmune : SLE.

45. Actions of digitalis.

46. Side effect of β blockers, Ca channel blockers, diuretics.

47. Contraindications of thrombolytic therapy. See ttt of MI

48. Factors contribute to digitalis toxicity :

Old age , Renal failure (digoxin), Liver failure (digitoxin), Hyokalemia, Hypomagnesemia, Hypercalcemia , Hyper & hypo thyroidism, Drugs (quinine, verapamil, amiodarone).

49. Causes of mitral stenosis.

50. Causes of hemoptysis in MS :

- Pulmonary congestion.
- Pulmonary apoplexy : Rupture of bronchial varices.
- Pulmonary embolism.

51. Causes of pulsus paradoxus.

In Capsule Series

52. Causes of absent radial pulse.
53. Abnormal early diastolic sound heard at the apex of the heart :
 - Loud P₂.
 - S₃ gallop.
 - Opening snap.
 - Pericardial knock.
 - Tumor plop (atrial myxoma)
54. Peripheral arterial signs of chronic aortic regurge.
55. Complications of rheumatic heart diseases. 12
56. Causes of absent apex.
57. Causes of cyanosis (central , peripheral)
58. Causes of clubbing of fingers.
59. Causes of accentuated S₁, S₂.
60. Causes of diminished S₁.
61. Causes of abnormal splitting of S₂.
62. Causes of cough in cardiac patient :*
 - Pulmonary congestion.
 - Pulmonary infection.
 - Pulmonary infarction.
 - Enlarged left atrium.
63. Cardiac causes of hemoptysis.
64. Cardiac signs of LSHF.
65. Local signs of LVE 🐦
66. Local signs of RVE 6
67. Causes of pallor in cardiac patient :
 - Anemia.
 - Rheumatic fever.
 - Low COP.
 - Infective endocarditis.
 - Shock.
 - Myocardial infarction.
68. Causes of jaundice in cardiac patient :
 - Hepatitis (injection).
 - Systemic congestion → liver congestion → cardiac cirrhosis.
 - Pulmonary infarction.
 - Anticoagulant therapy.
 - Artificial valve. *WhiteKnightLove*

69. Signs of hyperdynamic circulations :

- Pulse : tachycardia , water hammer pulse.
- Neck : Carotid pulsation
- Hand : warm , capillary pulsation.
- Heart : accentuated S1 , S2 , haemic murmure.

70. Causes of unequal radial pulse :

- Coarctation of aorta.
- Dissecting aorta.
- Embolism in brachial artery e.g infective endocarditis.
- Pancoast tumor.
- Unilateral cervical rib.

71. Causes of fever in cardiac patient :

- Rheumatic fever.
- Infective endocarditis.
- Pericarditis.
- Myocarditis.
- Collagen diseases e.g. RA associated with AR 😊
- Myocardial infarction.
- Pulmonary infarction.
- Pulmonary infection.

72. Criteria of cardiac edema :

- a) Dependent : ankle edema in ambulant , sacral in bed ridden patients
- b) Bilateral : but one side may be affected more due to DVT or in patient sleep on one side.
- c) Pitting.
- d) Edema precedes ascites EXCEPT in ascites precox.

73. Causes of giant “ A “ wave.

74. Causes of systolic expansion of neck vein :

- I. Giant “V” wave : TR , AF , ASD , Constrictive pericarditis.
- II. Cannon “a” wave :
 - Nodal rhythm.
 - Paroxysmal nodal tachycardia.
 - Occasional cannon : VT , CHB.

75. Causes of non pulsating congested neck vein :

- Mediastinal syndrome, chronic mediastinitis (fibrosis of SVC)
- Severe pericardial effusion.
- Severe constrictive pericarditis.
- Severe RSHF.

76. Causes of pulsating congested neck vein :**I. Restrictive heart diseases :**

- a) Early constrictive pericarditis.
- b) Early pericardial effusion.
- c) Restrictive cardiomyopathy.
- d) RV infarction.
- e) COPD.
- f) Acute attack of bronchial asthma.

NB : Inspiratory filling (Kausmaul sign) in a, b, c, d.

Expiratory filling in e, f.

II. Increased atrial pressure : Early RVF (commonest cause), TR, TS.

III. Increased intrathoracic pressure : pneumothorax, emphysema.

IV. Increased intraabdominal pressure : ascites, pregnancy

V. General : hyperdynamic state , AGN (hypertension).

الذي يرحون بالدموع يحدود بالابتهاج
انظروا إلى الأجيال القديمة وتأملوا. هل توكك أحد على الرب فخري؟
الذي بدأ معك أول الطريق له يترك في منتصفه
هو شايك هو عارق مش ينسي ☺

GIVE A SHORT ACCOUNT ON :

1. Management of acute pulmonary edema.

سؤال مهم جدا ممكن ييجي بصورة مباشرة كما انه يكتب في اجابة الاسئلة الاتية :

- LSHF
- Early complications of MI
- DD of acute dyspnea
- Acute comp of systemic HTN.

Causes :

A) Cardiogenic : (\uparrow pulmonary hydrostatic pressure)

- Acute LSHF : MI , acute MR & AR.
- On top of chronic LSHF : MS with ppt factors : AF

B) Non cardiogenic (ARDS) :

(\uparrow capillary permeability)

Def : Diffuse alveolar damage (DAD) ch by \uparrow cap permeability , pulm edema & refractory hypoxia .

Etiology : 2 s , 2 b , 2 p

- Sepsis
- Aspiration of gastric contents.
- 2 P : Pneumonia , Pancreatitis.
- 2 B : Burn , Bl transfusion .
- Terminal renal & hepatic failure .

C/P of acute pulmonary edema :

- Acute severe dyspnea (at rest & orthopnea)
- Cough with frothy blood tinged sputum.
- Central cyanosis
- Sweating , irritability
- Bilateral basal crebitations & rhonchi
- Feature of the cause e.g. : MI وينكر

DD of acute dyspnea & chest pain : see book p 104 (MI & 6 P) مهمة جدا

ممکن تیجی سوال مباشر علاوه انها هتکتب مع معظم اسئلة الكارديو

Investigations :

- Chest x ray :
- ECG : MI وتذكر
- Echo :
- Catheterization.
- Cardiac enzymes : for MI
- ABGs : \downarrow O₂ , \downarrow PCO₂ (\uparrow in late cases)
- Inv for ARDS : no LSHF (PCWP < 18)

Treatment :

- Cardiogenic : (.....) see acute heart failure p14
- Non cardiogenic : TTT of ARDS (Antibiotics, cortisone, mech ventilator)

2. Etiology, C/P, Investigations, Treatment of LSHF

لا بد من ذكر ال acute heart failure

3. Congestive heart failure : LSHF + RSHF

4. Diastolic heart failure : see cardiology book p15

5. Refractory (Intractable) heart failure .

6. Diagnosis, prophylaxis, treatment of rheumatic fever.

7. Auscultation of mitral stenosis.

8. Diagnostic criteria of Infective endocarditis.

= Duke's criteria : see above

9. Etiology, C/P, Investigations, Treatment of Infective endocarditis.

- i. Etiology : 2 factors (Infection & underlying cardiac disease).....

Types:

- ✎ **Sub acute IE** : most common & requires combinations of the 2 factors (infection & cardiac lesion).
- ✎ **Acute IE** : affecting the healthy endocardium ,usually occurs in the right side of the heart in addicts → Lung abscess esp with staph aureus.

- ii. C/P : تخيل ان واحدة حلوة اوي داخله عليك دلوقتي

توصلها	Toxic face
تخط ايدك علي دماغها	Fever
تبص في عينيها و بتمعن	✎
تمسك ايدها	✎
تكشف عليها	Spleen, kidney, Brain , Lung
وبعدين قلبها	✎

- iii. Investigations : اهم كلمتين هما

Blood culture & TEE (Trans Esophageal Echo)

- iv. Treatment : (Prophylactic , therapeutic)

10. Complications of acute myocardial infarction :

✎ Early (acute) : 6

✎ Late (Chronic) : 6

Acute : see book p 57

C/P , Inv , ttt وتكتب في كل واحدة

a- Shock :

Cardiogenic : هام جدا

- c/p : acute pulm edema
- Inv : ↑ JVP
- ttt : Dobutamine + intra aortic ballon counterpulsation .

Neurogenic :

- C/P : hypotension , bradycardia
- Inv : low JVP
- ttt : morphine

b- Acute HF = Acute pulmonary edema

c-Arrhythmia : V Tach وتذكر ال

11. Investigations , Treatment of myocardial infarction.**12. Unstable angina :**

Definition : Angina at rest, lasting more than 10 min, ↑ frequency & severity.

Etiology :

a) Non occlusive coronary thrombosis on top of atherosclerosis.

b) Post infarction angina.

c) Coronary artery spasm : Prinzmetal (Variant) angina .

- Unpredictable angina, at rest.

- ECG : Transient ST elevation.

- TTT : Nitrate & Ca channel blockers are drugs of choice.

β blockers are contraindicated (↑ coronary spasm)

Investigations of unstable angina :

- ECG : show changes in about 30 - 50%

- Cardiac enzymes : are NOT elevated ,to differentiate it from MI.

- Coronary angiography.

Treatment : to reduce progression to MI

I. Medical :

- ✗ IV infusion nitroglycerin : 5-10 µg/min and is raised gradually.

- ✗ β blockers.

- ✗ Anti -platelets : Aspirin , Clopidogrel (Plavix)

- ✗ LMW heparin : enoxaparine (clexane)

II. Coronary revascularization : PTCA or CABG.

13. **Acute coronary syndrome :**

- A. Unstable angina.
- B. MI (STEMI , NSTEMI)

14. **The anatomy of coronary arteries.**

15. **Atypical presentation of myocardial infarction.**

= clinical presentation of IHD - typical chest pain.

Don't forget silent MI.

16. **Diagnosis & Treatment of angina.**

17. **Early management of myocardial infarction**

18. **Complications (Target organ damage) of systemic hypertension.**

👉 : 2C , 2R , Vascular

19. **Lines of treatment of systemic hypertension, pharmacological details of 3 antihypertensive drugs.**

20. **Hypertensive crisis :**

It is characterized by extremely high blood pressure

Hypertensive urgency:

Rapid rise of BP > 220/120 mmHg & **NOT** associated with target organ damage e.g. renal failure , heart failure .

Hypertensive emergency:

Rapid rise of BP > 220/120 mmHg & associated with target organ damage .

Malignant HTN : Hypertensive crisis with grade IV retinopathy plus papilloedema.

Accelerated HTN : Hypertensive crisis with grade III retinopathy.

Accelerated : Ac³lated → grade **3** retinopathy 😊

Approach to the patient :**I. History :**

- a) History of hypertension or other significant diseases.
- b) Medication use.
- c) Symptoms of TOD (target organ damage) : ☞ 2C, 2R, vascular
 - Cardiac : chest pain, shortness of breath.
 - Renal : hematuria , decreased urine volume.
 - CNS : nausea, vomiting, visual changes, seizures.

II. Examination :

- a) Blood pressure reading in both arms.
- b) Ophthalmoscope examination.
- c) Neurological examinations : e.g. signs of lateralization.
- d) Cardiac examination : e.g. Auscultation heart.
- e) Abdominal examination : e.g. for bruits .

III. Investigations :

- a) Lab : Electrolytes, Urea , creatinine, CBC
- b) Echocardiography.

Treatment :

- It is unwise to lower the BP too quickly as it may lead to organ hypoperfusion & stroke .
- The initial goal of therapy should be to achieve BP diastolic 100-110 mmHg
- In hypertensive emergencies (with TOD), BP control should be within 1 hour to decrease the risk of permanent damage.

- In hypertensive urgency, BP control is more slowly over days not hours.

- **Drug therapy :**

i. Rapid acting antihypertensive drugs :

- Na nitroprusside (Nipride) : $0.5 - 5 \mu\text{g/kg/min}$ (infusion) .
- Nitroglycerine : $10 - 100 \mu\text{g/kg/min}$.
- Diazoxide : 100 – 300 mg rapidly IV .
- Hydralazine : 20 mg IV .
- Labetalol : 20 mg IV every 10 minutes until control of BP (maximum 200 mg)
- Fenoldopam : is a new dopamine receptor agonist .
- Enalapril : IV 1.25 - 5 mg (over 5 min)/6h
- Captopril : 25 mg , repeat /30min if necessary.
- Lasix may be used with one of the above agents .

NB : *Never use sublingual nifedipine to reduce BP (it can cause an uncontrollable drop in BP and stroke).*

ii. Specific treatment :

a) Hypertensive encephalopathy : add

- ✎ Anticonvulsant : Diazepam IV .
- ✎ Cerebral dehydrating measures : 25 % Mannitol infusion with lasix .

b) Treatment of the target organ damage (TOD) : stroke , HF & RF .

21. Hypertensive encephalopathy.

Don't forget how to differentiate between stroke & hypertensive encephalopathy

- Stroke : signs of lateralization. (unilateral)
- Hypertensive encephalopathy : No signs of lateralization. (bilateral)

Notice that α methyl dopa is contraindicated MCQ

*In Capsule Series***22. C/P, Investigations of pulmonary embolism.**

Don't forget DD of acute dyspnea with acute chest pain (MI & 6 b)

23. Prophylaxis & treatment of pulmonary embolism.**24. There are no clinical or laboratory finding that will confirm or exclude the diagnosis of pulmonary embolism Comment****25. C/P, Investigations, Treatment of atrial fibrillation.****26. C/P, Investigations, Treatment of Ventricular tachycardia.****27. C/P, Investigations, Treatment of complete heart block.****28. C/P, Investigations of dilated cardiomyopathy.**

✎ C/P : C A T (CHF, Arrhythmia, Thrombosis)

✎ Investigations : scheme + biopsy.

29. Management of pericardial effusion.**30. Diagnosis of cardiac tamponade.****31. What are the clinical features favoring restrictive cardiomyopathy rather than constrictive pericarditis.**

✓ Prominent apical pulse.

✓ Normal y wave, large V wave.

✓ Associated signs of mitral or tricuspid regurge : due to involvement of the papillary muscles by fibrosis.

✓ No pericardial knock.

✓ X ray : no or mild RVE with no pericardial calcification.

✓ The diagnosis is proved by abnormal endomyocardial biopsy.

32. Cigarette smoking as a cardiac risk factor. ORAL EXAM

- ☒ It increases platelets adhesion, aggregation & whole blood viscosity.
- ☒ It increases carboxyhemoglobin & hematocrite value.
- ☒ It increases HR, catecholamine release & sensitivity.
- ☒ Decreases threshold of ventricular fibrillation.
- ☒ Decreases level of HDL
- ☒ It increases morbidity from peripheral vascular diseases.
- ☒ It increases mortality due to aortic aneurysm.
- ☒ Increases incidence of sudden death, coronary artery disease & malignant hypertension. (smoking accounts for 30% of all Cardiovascular deaths)

33. When do you suspect an atrial myxoma ? ORAL EXAM, MCQ

- All features of mitral stenosis with intermittent varying murmurs without opening snap.
- Clinical features & Echo mimic infective endocarditis but with -ve blood cultures & splenomegaly is absent. MCQ
- Positional syncope.
- Pulmonary edema without obvious cause.

34. DD of acute chest pain.

35. DD of RSHF.

36. DD of LSHF.

37. DD of acute dyspnea with acute chest pain.

38. DD of regular tachycardia.

39. DD of LCOP with systemic congestion.

40. DD of systolic murmurs (over the apex & over the base of the heart) P33
41. Differences between cardiac & bronchial asthma.
42. Differences between rheumatic & rheumatoid arthritis. *See rheumatology*
43. Differences between rheumatic fever & infective endocarditis.
44. Differences between: Stroke & hypertensive encephalopathy.
45. Differences between : AF & premature beats.
46. Cardiac, renal & hepatic edema.
47. Is HF always associated with a decreased EF ? **ORAL EXAM**

Systolic dysfunction is defined as a decrease in contractile function most commonly measured as a decrease in EF. Many patients with HF have a decreased EF. However, almost half of all patients with HF have a normal EF. In some of these patients, diastolic dysfunction is the cause. Diastolic dysfunction results when the heart is stiff and ventricular filling is impaired, resulting in increased end-diastolic pressures. Patients may have diastolic dysfunction with or without systolic dysfunction. Typical signs and symptoms of HF occur with either normal or abnormal EF. Typically, the prevalence of HF with a normal EF is most common in elderly women.

الذي يرحون بالدموع يحدود بالابتهاج
الظنوا إلى الأجيال القديمة ونأملوا. هل توكك أحد على الرب فخري؟
الذي بدأ معك أول الطريق له يترك في منتصفه
هو شاف هو عارف مش ينسى ☺

Cases

1- A 65-year-old man with a history of hypertension & diabetes mellitus is seen in the ER complaining of sudden onset of chest pain and severe dyspnea at rest. He is currently taking enalapril (5 mg twice a day) to control his blood pressure. Physical examination reveals a pale white male in acute respiratory distress, who is anxious and diaphoretic. His blood pressure is 180/100 mm Hg, his apical pulse is 170 /minute and irregular, and his respiratory rate is 40 per minute. Examination of the lungs reveals rales extending two thirds up from the base of the lung fields bilaterally. Examination of the heart reveals a jugular venous pressure of 12 cm of water, a third sound (S_3), and a grade 2/6 pansystolic murmur heard at the apex. Arterial blood gas determinations show a partial pressure of oxygen of 50 mm Hg, a partial pressure of carbon dioxide of 30 mm Hg, and a pH of 7.48. A chest radiograph shows an enlarged heart and pulmonary edema. The ECG reveals atrial fibrillation with a ventricular response of 170 beats per minute, a loss of R waves, and 4 mm of ST elevation.

- a) What is the provisional diagnosis ?
- b) What is causing the pulmonary edema in this patient?
- c) What medical therapy should be used to treat this patient acutely ?

a) What is the provisional diagnosis ?

A diagnosis of acute anterior wall MI complicated by atrial fibrillation and pulmonary edema .

b) What is causing pulmonary edema in this patient ?

- 1) **MI** impairs both the systolic and diastolic function of the left ventricle. lead to elevated filling pressures of the left ventricle and the left atrium \Rightarrow Pulmonary congestion \Rightarrow resulting in the transudation of fluid into the interstitium and then into the alveolar space.
- 2) **Atrial fibrillation with a rapid ventricular response**
 - i. the loss of atrial systolic contraction \rightarrow elevates the left atrial pressure \rightarrow Pulmonary congestion.
 - ii. the rapid ventricular rate results in significant shortening of diastolic filling time further impairing filling of the left ventricle.
 - iii. the rapid ventricular rate increases myocardial oxygen demands, which may increase ischemia, which in turn worsens the pulmonary edema.
- 3) **Hypertension**, especially when chronic and poorly controlled, produces a stiff, hypertrophied myocardium causing elevated ventricular filling pressures.
- 4) **Mitral regurge** (Pansystolic murmur): due to papillary muscles dysfunction or rupture.
- 5) **Anxiety** secondary to the pain and breathlessness is likely to increase the heart rate and blood pressure, thereby contributing to pulmonary edema by increasing the afterload.

c) What medical therapy should be used to treat this patient acutely ?

- 1- TTT of MI : acute coronary reperfusion (revascularization) : PTCA
- 2- TTT of acute pulmonary edema (.....)

2- A 45-year-old man is seen in the outpatient department complaining of intermittent throbbing headaches that have occurred every morning for 2 weeks. He has a history of untreated, asymptomatic, sustained high blood pressure (160 to 170/100 mm Hg) of 4 years' duration. He has no history of palpitations, sweating, tremor, or periodic paralysis. His father was also hypertensive and died of stroke at 67 years. The patient has smoked cigarettes, two packs per day, for 30 years. He is taking no medications. His physical examination reveals a blood pressure of 170/110 mm Hg and a heart rate of 90 per minute and regular. Fundus examination reveals the presence of arterial vasoconstriction. Cardiac examination reveals a sustained apex, S₄, no S₃, and no murmur. During abdominal examination, no bruit or mass is found and the neurologic and other systems are unremarkable.

- a) How should blood pressure be measured?
- b) What is the most likely cause of this patient's hypertension?
- c) What laboratory tests are indicated?
- d) Will lifestyle changes improve his blood pressure?
- e) What is the target blood pressure with treatment?

a) How should blood pressure be measured? ☺

The patient should be seated in a chair with his feet on the floor in a quiet place for at least 5 minutes. At least two measurements should be made.

Systolic blood pressure is defined as the blood pressure at which the first sound is heard and diastolic pressure is defined as the pressure at the disappearance of the sounds.

b) What is the most likely cause of this patient's hypertension?

The most likely cause of this patient's hypertension is essential hypertension.

c) What laboratory tests are indicated?

- Blood urea , serum creatinine.
- Electrolytes : K , Ca.
- Blood glucose, Lipid profile (cholesterol and triglyceride)
- Urine : for blood , protein and glucose.

d) Will lifestyle changes improve his blood pressure?

- i. Stop smoking.
- ii. Weight reduction (BMI should be $< 25 \text{ Kg/m}^2$)
- iii. No alcohol.
- iv. Regular exercise.
- v. Diet : Low salt : $< 6\text{gm/d}$, Potassium : increase fruits & vegetables, low saturated fat diet.
- vi. Avoid stressful conditions as possible (meditation)

e) What is the target blood pressure with treatment?

The target blood pressure with treatment is less than 140/90 mm Hg. If the patient had diabetes or chronic kidney disease the recommended target blood pressure would be less than 130/80 mm Hg.

You instruct your patient in lifestyle changes and start him on lisinopril 10 mg once daily. In 2 weeks you increase the lisinopril to 20 mg daily because the blood pressure is still 160/98 mm Hg. Electrolytes and creatinine levels are unchanged. The increased lisinopril does not significantly alter the pressure and you add chlorthalidone at 25 mg daily. In 4 weeks his blood pressure is 139/88 mm Hg and his electrolytes and creatinine levels are normal. The blood pressure remains well controlled for the next 6 months, but the patient does not return for the next follow-up visit. Two years later, he presents to the ER complaining of blurred vision and severe headaches. His physical examination at that time reveals a blood pressure of 240/140 mm Hg and heart rate of 100 per minute. He is mildly confused and the fundus examination reveals retinal hemorrhages, exudates, and papilledema. Heart examination shows clear lungs and a sustained left ventricular apical impulse and S4. The chest radiograph shows mild to moderate cardiomegaly. His serum creatinine level is 2.4 mg/dL. The ECG shows normal sinus rhythm and ST-segment depression and T-wave inversion. Troponin is normal and he has no chest pain.

- a) What is the diagnosis?
- b) What is the most likely reason for the fundus findings and the serum creatinine level of 2.4 mg/dL?
- c) What should be the plan of treatment now?

a) What is the diagnosis ?

The diagnosis is hypertensive crisis (malignant hypertension)

b) What is the most likely reason for the fundus findings and the serum creatinine level of 2.4 mg/dL?

Marked increase in blood pressure causing a damage to the vascular endothelium causing fibrinoid necrosis in the vessels of the eye and in the kidney. These changes are exacerbated by activation of the rennin-angiotensin system.

c) What should be the plan of treatment now?

See above (The approach to a patient with hypertensive crisis.

3- A 42 years old woman is admitted for weakness and fever. She has been taking tetracycline for 2 weeks at home for symptoms of flu with no improvement. The patient is pale & feverish with petechiae in the conjunctiva. Examination of the heart reveals a harsh loud pansystolic murmur. The spleen is palpable 4 cm below the left costal margin.

a) What is the most likely diagnosis ?

b) What are the other clinical finding you may find ?

c) How to manage the case ?

Likely diagnosis : Infective endocarditis.

4- A 45 year old man came complaining of chest pain with exertion, several weeks of worsening exertional dyspnea, history of lightheadedness as if he was about to faint. He has orthopnea with occasional paroxysmal nocturnal dyspnea. He does not smoke or drink alcohol.

On examination : temp 37°C, HR 104/m, blood pressure 115/90 mmHg & respiratory rate 16/m. Examination of the head and neck revealed congested neck vein. Chest examination : Bilateral basal inspiratory crackles. Cardiac examination : apex is felt in the 6th space outside MCL, his heart rhythm is regular with S4 at the apex. Ejection systolic murmur at the upper right sternal border that radiates to his carotid.

- a) What is the most likely diagnosis?
- b) What is the most appropriate investigation to reach the diagnosis? Why?
- c) What are the indications of surgery?

- a) The most likely diagnosis is congestive heart failure, possibly as a result of aortic stenosis
 - Data with :
 - Data suggest CHF : Exertional dyspnea, chest pain, PND, syncope, tachycardia, bilateral basal crackles, congested neck vein, ..
 - Data suggest AS : Exertional syncope, S4, ejection systolic murmur at the upper right sternal border that radiates to his carotid, ..
 - No data against.
- b) Echocardiography : to assess the aortic valve area, the LV systolic function (EF) & to estimate the pressure gradient across the valve.
- c) Indication of surgery : "Aortic valve replacement"
 - Valve area < 0.8 cm²
 - Systolic pressure gradient across the aortic valve > 50 mmHg.
 - Severe symptoms : as it indicates significant pressure gradient across the valve (> 50 mmHg)

In Capsule Series

5- A 31 year old man complaining of a sudden onset of sharp left chest pain, increased by deep inspiration & coughing. Physical finding, chest X ray and ECG are normal. What is your differential diagnosis ?

- Acute pleurisy (coxsackievirus A,B)
- Acute pericarditis (coxsackievirus B)
- Pneumonia (viral)
- Pulmonary embolism or infarction.
- Pneumothorax .

6- A 55 year old man presents to the emergency center with acute onset of squeezing and diffuse anterior chest pain associated with diaphoresis and dyspnea.

- a) What is your differential diagnosis ?
- b) Which tests will help confirm your clinical suspicions ?
- c) Is a normal troponin helpful in excluding an acute MI ?

a) **DD :**

- Acute MI.
- Angina.
- Aortic dissection.
- Acute pericarditis.
- Acute pulmonary embolism.
- Acute pneumothorax.

b) **Which tests will help confirm your clinical suspicions ?**

- Serial ECG : to look for ST elevation (MI, dry pericarditis), ST depression (angina , NSTEMI).
- Serial cardiac enzymes : will help to confirm the diagnosis of MI

- Chest X ray : to look for evidence of pneumothorax, wedge shaped pulmonary opacity suggests pulmonary embolism.
- NB : The absence of any ECG changes of MI or ischemia in patient with severe anterior chest pain radiating to the back should suggest the clinical diagnosis of aortic dissection (confirmed by CT, MRI, TEE).

c) Is a normal troponin helpful in excluding an acute MI ?

A normal troponin 8 or more hours after the onset of chest pain generally excludes acute MI but does not exclude Acute coronary syndrome.

7- a 68 year old asthmatic man has stable exertional angina of 4 years duration. His past medical history reveals intermittent claudication after walking 50 yards.

- What is your approach to medical therapy of his angina ?

This man has 3 medical problems : asthma, angina, intermittent claudication.

Of the available antianginal drugs :

- β blockers are contraindicated because of the presence of asthma.

Cardioselective β blockers (metoprolol, atenolol) may be used in low doses in asthma.

- The presence of peripheral vascular disease, as manifested by intermittent claudication, also is contraindication for the use of any β blocker.
- So, Ca channel blockers or nitrate are the anti-anginal drugs of choice in this patient.

8- A 50 year old man, heavy smoker, presented to ER with severe retrosternal chest pain of one hour duration. On examination he was sweaty, his pulse was 94/m, his BP was 100/70. A third sound was heard over the apex. Troponin levels was high.

- What is the most proper diagnosis ?
- How would you manage this case ? (investigations and treatment)

Six hours later runs of ventricular tachycardia started to show on the monitor.

- What are you going to do ?

In the next few days he was stable, and was discharged from the hospital.

- In your opinion, what are the medications he should receive ?

Ten days later he developed recurrent episodes of angina.

- What would be the appropriate management ?

- Most likely diagnosis is myocardial infarction with LVF because :

- Data with : severe retrosternal chest pain of one hour duration, heavy smoker old patient, sweating, high troponin. LVF suggested by S₃.
- No data against.

- Investigations of MI, TTT : pre hospital & hospital ttt

- Anti-arrhythmic drugs e.g. Lidocaine or amiodarone, cardioversion.

- After discharge ttt of MI : 🖐

- PTCA or CABG is considered (mention indications), ttt of unstable angina.

9- A 45 year old diabetic, heavy smoker, presents with recurrent precordial pain, often radiating to the chin & left shoulder. The pain is precipitated by moderate physical activity or emotional stress, and is relieved by rest and sublingual nitrate.

- a) What is your investigations ?
- b) How to investigate the case ?
- c) How to treat the case ?

Two years later, he was brought to the ER in severe and persistent acute chest pain, with the same distribution as before, but without relief by rest, sedatives or nitrates. ECG showed depressed ST segment and inverted T wave in leads I, II, aVL and v4-6. CK MB was normal.

- d) What is your diagnosis ?

Three years later, the patient was brought again in shock, with BP 80/30 mmHg, regular pulse with a rate of 40/m, venous pulsation in the neck at a rate of 100/m, with occasional cannon waves. The patient denies having had significant chest pain at the onset or before the episode. ECG shows deep wide Q, raised convex ST and inverted T in leads II, III and aVF together with P-QRS dissociation in all leads.

- e) What is the probable diagnosis ?
- f) How to investigate this patient ?
- g) How to treat this patient ?

a) The most likely diagnosis is stable angina.

d) unstable angina because of normal CK MB & depressed ST segment.

Serial cardiac enzymes is recommended to exclude NSTEMI.


e) Painless inferior myocardial infarction complicated by complete heart block.

NB : painless MI may be due to diabetic neuropathy.

f) Investigations of MI (.....)

g) TTT of MI but avoid morphine , β blockers & nitrate because of shock.

TTT of complete heart block : atropine , temporary pacemaker.



Remember

Site of infarction as regard to ECG

- ✓ Anterior infarction : $V_2 - V_5$
- ✓ Inferior MI : III, aVF
- ✓ Lateral MI : I, aVL, $V_5 - V_6$.
- ✓ Anterolateral MI : I, aVL, $V_2 - V_6$
- ✓ Posterior MI : dominant R waves in lead V_1

10- A 67-year-old woman is admitted to the hospital complaining of severe symptoms of shortness of breath that has worsened over the last 12 hours. She tells you that she has had diabetes mellitus for the last 20 years and hypertension that has been fairly well controlled for 15 years. Your examination reveals an S3 gallop and rales to her midscapular area. She also tells you that she has experienced recurrent chest heaviness over the last 2 days. When the ECG is done, there are Q waves in leads V2, V3, V4, and V5. A call to her regular physician reveals she had a normal ECG when he saw her 1 month ago.


- a) What is the provisional diagnosis ?
- b) At this point, what should you do?
- c) What therapeutic interventions should be instituted at the time of admission?
- d) What are the indications of CABG ?

a) Recent anterior MI with left ventricular failure.

b) She needs to be hospitalized immediately, treated for HF, monitored for arrhythmias and recurrent ischemia.

Thrombolytic therapy or PCI is not indicated because this is a completed infarction, nearly 48 hours old.

c) TTT of cardiogenic pulmonary edema : oxygen administration and diuretics...

TTT of MI : 

monitoring is necessary to detect arrhythmias.

d) Indications of CABG :

- Left main coronary artery disease or 3 vessels disease.
- For diabetic patient with 2 or 3 vessels disease.

11- A 59 year old man presents with acute shortness of breath, epigastric pain and vomiting. Examination reveals a pulse of 58/m and BP 60/30mmHg. The JVP is significantly raised, lung and heart examination is within normal limit. ECG reveals ST elevation in leads III and aVF.

- a) What is the most likely diagnosis, and why ?
- b) I know that you not consider perforated peptic ulcer in the diagnosis of this case. Why ?
- c) Mention the most likely cause of bradycardia in this case ?

a) The most likely diagnosis is inferior MI.

Data with :

☞ Triad of : Distended neck veins, Hypotension, Clear lung.

☞ ECG finding.

b) Perforated peptic ulcer often presents with epigastric pain and vomiting and might lead to a septic shock. This manifests with hypotension, tachycardia and the JVP is not raised. Also one would not expect to see ischemic changes on ECG. So

data against perforated peptic ulcer are :

- High JVP.
- Pulse : 60/m.
- ECG findings.

c) Bradycardia is often seen with inferior MI because the right coronary artery.

MCQ

- 1- The cause of silent myocardial infarction may be :
 - a) Athletes
 - b) Obese
 - c) Females
 - d) Diabetes mellitus

- 2- Which of the following best describes the effect of calcium ions on the myocardium?
 - a) Positively inotropic
 - b) Negatively inotropic
 - c) Positively chronotropic
 - d) Negatively chronotropic

- 3- Wide fixed splitting of the second heart sound occur in :
 - a) Mitral stenosis
 - b) Mitral regurge
 - c) Atrial septal defect
 - d) Ventricular septal defect

- 4- In the absence of critical stenosis of the coronary arteries, angina pectoris occurs most frequently with which of the following valvular heart diseases?
 - a) Mitral stenosis
 - b) Mitral regurge
 - c) Aortic stenosis
 - d) Aortic regurge

5- Which of the following cardiac lesion has the highest risk of developing infective endocarditis?

- a) VSD
- b) ASD
- c) Mitral valve prolapse with regurgitation
- d) MS

☞ VSD : high risk lesion for IE

☞ MS : intermediate risk

☞ ASD : low risk

6- Which lipid pattern suggests the lowest risk for CAD?

- a) Total cholesterol 215 mg/dL, HDL cholesterol 28 mg/dL
- b) Total cholesterol 215 mg/dL, HDL cholesterol 43 mg/dL
- c) Total cholesterol 180 mg/dL, HDL cholesterol 29 mg/dL
- d) Total cholesterol 202 mg/dL, HDL cholesterol 45 mg/dL**

This combination has the lowest risk, although the total cholesterol is on borderline, the high HDL cholesterol is protective.

- Total cholesterol : N \rightarrow < 200 , borderline : 200-240, high ≥ 240
- HDL : N \rightarrow 40-50 in σ 50-60 in φ
- LDL : < 70 Ideal for people at very high risk of heart disease, < 100 Ideal for people at high risk of heart disease.

7- Which one of the following is characteristic of atrial myxoma?

- a) It usually originate in the right atrium
- b) The clinical signs can mimic severe mitral regurgitation
- c) Recurrence is frequent, even after successful surgical removal
- d) Echocardiogram is diagnostic in most cases**

75% of cases originate in left atrium, the clinical signs mimic MS

8- A 52-year-old woman with no prior medical history presents in the emergency department with a 3-hour episode of crushing substernal chest pain. The pain radiates to her arm and neck. An ECG reveals ST segment elevation in leads II, III and aVF. The patient has no obvious contraindication to anticoagulation. Which of the following is the most optimal treatment at this time?

- a) Administration of IV fluids
- b) Administration of aspirin and heparin only
- c) **Administration of thrombolytic therapy, heparin, and aspirin**
- d) Cardiac surgery to bypass the occluded vessel

NB: If the patient is hypotensive, IV fluids may be needed.

9- The most effective diagnostic modality in a case of subacute bacterial endocarditis is :

- a) ECG
- b) Transthoracic echocardiogram (TTE)
- c) **Transesophageal echocardiogram (TEE)**
- d) Cardiac catheterization

10- Which of the following therapies has been shown to increase survival in a case of post myocardial infarction patients who have ejection fraction > 50% ?

- a) Angiotensin-converting enzyme inhibitor
- b) **Beta blocker** *Like Aspirin has the same role.*
- c) Digoxin
- d) Loop diuretic

- Beta blockers have been shown to improve survival after myocardial infarction (MI) by decreasing both oxygen demand and the incidence of ventricular arrhythmia.
- Angiotensin-converting enzyme (ACE) inhibitors (choice A), such as enalapril, have been shown to improve survival in post-MI patients who have ejection fractions less than 40%.

In Capsule Series

11- A 51-year-old man is brought to the emergency department for chest pain. The patient has chronic stable angina that is usually precipitated by activity and relieved by rest. About 3 weeks ago, his physician prescribed sildenafil (Viagra), and he has been using the drug with success. This morning, he developed acute onset of substernal chest pain, radiating to his left arm. This pain is not relieved by rest. The patient last took a sildenafil the night before. Which of the following treatments is absolutely contraindicated in this situation?

- a) Captopril
- b) Metoprolol
- c) Nitroglycerin
- d) Tissue plasminogen activator (tPA)

The co-administration of nitrates within 24 hours after taking sildenafil is absolutely contraindicated. The vasodilatory effects of nitrates are amplified when administered in the presence of sildenafil (Viagra), which can lead to refractory and life-threatening hypotension. Therefore, patients using sildenafil should be instructed to report their use on presentation to any emergency department and to never take nitrates while using the drug.

12- A 57-year-old man presents to his physician for follow-up. He has a positive family history for coronary artery disease and he has smoked one-half pack of cigarettes per day for the past 20 years. Which of the following lipid patterns would most strongly suggest the need for pharmacologic therapy in this patient?

- a) Total cholesterol 180 mg/dL, LDL cholesterol 140 mg/dL
- b) Total cholesterol 230 mg/dL, LDL cholesterol 100 mg/dL
- c) Total cholesterol 245 mg/dL, LDL cholesterol 165 mg/dL
- d) Total cholesterol 285 mg/dL, LDL cholesterol 100 mg/dL

- A patient with 2+ risk factors and an LDL of greater than 160 mg/dL needs medical therapy.
- A total cholesterol of 180 mg/dL, LDL cholesterol of 140 mg/dL (choice a) : in this patient could be managed with a trial of dietary modification and education.
- A total cholesterol of 285 mg/dL with an LDL cholesterol of 100 mg/dL (choice d) : does not require drug therapy. The total cholesterol is elevated, but the LDL is not, suggesting high HDL level.

13- In a patient with central chest pain at rest :

- a) Relief of pain by nitrates excludes an esophageal cause *able to*
- b) Features of autonomic disturbance are specific to cardiac pain
- c) Intrascapular radiation suggests the possibility of aortic dissection *Associated with AR and an equal pulse*
- d) Myocardial ischemia radiates to the neck but not the jaw

Notice that autonomic disturbance may occur in severe pain from any cause.

14- Recognised causes of secondary hypertension include EXCEPT

- a) Persistent ductus arteriosus.
- b) Coarctation of the aorta
- c) Primary hyperaldosteronism.
- d) Acromegaly

15- As regarded to the auscultatory findings listed below, which is correct?

- a) Third heart sound-opening of mitral valve
- b) **Varying intensity of first heart sound-atrioventricular dissociation**
- c) Soft first heart sound-mitral stenosis
- d) Fourth heart sound-atrial fibrillation

16- In the investigation of suspected angina pectoris :

- a) Physical examination is of no clinical value
- b) **The resting ECG is usually normal**
- c) Exercise-induced elevation in blood pressure indicates significant ischemia
- d) A normal ECG during exercise excludes angina pectoris

Physical examination is important to exclude anemia and valvular stenosis.

17- In the treatment of patients with angina pectoris :

- a) Aspirin reduces the frequency of anginal attacks.
- b) Glyceryl trinitrate is equally effective when swallowed as when taken sublingually
- c) **Calcium antagonists may cause peripheral edema**
- d) β blockers are more effective than other anti-anginal agents

18- In the treatment of acute myocardial infarction :

- a) Aspirin given within 6 hours of onset reduces the mortality
- b) Diamorphine is better given intramuscular than by any other route
- c) Immediate calcium channel blocker therapy reduces the early mortality rate
- d) Nitrate therapy reduces the early mortality rate

19- Drug therapies which improve the long-term prognosis after myocardial infarction include EXCEPT :

- a) Aspirin
- b) Calcium antagonists
- c) ACE inhibitors
- d) β -blockers

20- Clinical features suggesting aortic stenosis include :

- a) Late systolic ejection click
- b) Slapping apex beat
- c) Syncope associated with angina
- d) Loud second heart sound

21- Disorders associated with aortic regurgitation include EXCEPT

- a) Ankylosing spondylitis
- b) Marfan's syndrome
- c) Syphilitic aortitis
- d) Persistent ductus arteriosus

22- In atrial septal defect :

- a) The lesion is usually of primum type
- b) The initial shunt is right to left
- c) Splitting of the second heart sound increases in expiration
- d) The ECG typically shows right bundle branch block

23- Dilated (congestive) cardiomyopathy is EXCEPT

- a) Usually idiopathic
- b) Associated with specific ECG changes**
- c) Associated with chronic alcohol misuse
- d) Caused by Cocksackie A, influenza and HIV infection

24- All of the following are recognized complications of acute MI EXCEPT

- a) Acute mitral regurge
- b) Acute aortic regurge**
- c) Dressler's syndrome
- d) Left ventricular aneurysm

25- Which of the following tests is most sensitive and specific for the diagnosis of coronary artery disease?

- a) Stress ECG
- b) Stress echocardiography
- c) Cardiac catheterization and coronary angiography**
- d) Multi slice CT

26- Mitral stenosis ...

- a) Graham steel murmur may occur**
- b) Causes enlargement of both left atrium & left ventricle
- c) May lead to development of non cardiogenic pulmonary edema
- d) Rarely causes AF

Graham steel murmur is an early diastolic murmur heard in the second intercostal space to the left of the sternum. It is associated with pulmonary valve regurgitation in pulmonary hypertension.

27- Sudden death may occur in

- a) AS**
- b) ASD
- c) PDA
- d) Constrictive pericarditis

28- Clinically, severity of MS is best assessed by

- a) Diastolic shock
- b) Proximity of S2-opening snap gap**
- c) Paroxysmal nocturnal dyspnea
- d) Shorter duration of mid diastolic murmur

29- Clubbing is not a feature of :

- a) Fallot's tetralogy
- b) Left atrial myxoma
- c) Right to left shunt
- d) Acute bacterial endocarditis**

30- Digitalis toxicity is associated with all except

- a) Wenckebach block
- b) Ventricular bigeminy
- c) Paroxysmal atrial tachycardia with block
- d) Mobitz type II block**

31- Hemoptysis may be found in

- a) Left ventricular failure**
- b) Right ventricular failure
- c) Pulmonary stenosis
- d) Left to right shunt

32- Which is not a major manifestation of Jones criteria in rheumatic fever

- a) Chorea
- b) Erythema nodosum**
- c) Subcutaneous nodule
- d) Polyarthrititis

NB : Erythema marginatum not nodosum 😊

33- Atrial myxoma may be associated with all except

- a) Fever
- b) Splenomegaly
- c) Clubbing
- d) High ESR

34- S₄ is not associated with

- a) AS
- b) Hypertrophic cardiomyopathy
- c) Chronic mitral regurge
- d) Systemic hypertension

35- Incidence of infective endocarditis is least in

- a) MI
- b) ASD
- c) PDA
- d) VSD

36- Which enzyme rise earliest in acute myocardial infarction

- a) AST
- b) ALT
- c) CPK
- d) LDH

37- Which of the following β blockers is used in heart failure

- a) Carvedilol
- b) Atenolol
- c) Labetalol
- d) Pindolol

38- Drug of choice in acute management of PSVT is

- a) Amiodarone
- b) Verapamil
- c) Metoprolol
- d) Adenosine

39- Earliest valvular lesion in acute rheumatic carditis is

- a) MS
- b) AI
- c) $MR = MI$
- d) AS

40- Commonest heart valve abnormality revealed after acute myocardial infarction is

- a) AI
- b) MI
- c) AS
- d) AI

41- Which one of the following is the most reliable feature of chest pain secondary to ischemic heart disease?

- a) Retrosternal location
 - b) Radiation to the lower jaw**
 - c) ECG shows T wave inversion in lead III
 - d) Pain aggravated by heavy meals
- Retrosternal chest pain, though characteristic of ischemic heart disease, is also may occur in other condition such as esophageal spasm.
 - Radiation to the lower jaw is the most specific characteristic of angina pain.

42- In cardiopulmonary resuscitation which of the following is true?

- a) External cardiac massage should be performed at 30 compressions/min
 - b) Most patients in ventricular fibrillation will respond to 200 J shock**
 - c) Adrenaline should not be used in ventricular fibrillation
 - d) Calcium chloride should be given
- External cardiac massage should be done at a rate of 60-80/min
 - Calcium chloride is ineffective except in Ca antagonist overdose & after cardiac surgery

43- Which of the following statements is true regarding infective endocarditis?

- a) Can occur on previously normal heart valves
 - b) Can be caused only by bacteria
 - c) Streptococcus fecalis is the commonest pathogen
 - d) Occurs commonly in calcific mitral stenosis
- IE may occur in previously normal heart as occurs in IV drug addicts
 - It can be caused by bacteria as well as fungi & rickettsia

44- Treatment with thiazide diuretic :

- a) Improves glucose tolerance
- b) Reduces potassium loss
- c) **May precipitate gout**
- d) Reduces renin level

45- Accentuation during inspiration characterizes the murmur of :

- a) AR
- b) AS
- c) **TR**
- d) VSD

46- All of the following antiarrhythmic drugs can not be used with heart failure except

- a) Verapamil
- b) Disopyramide
- c) Quinidine
- d) **Amiodarone**

Most antiarrhythmic drugs have a negative inotropic effect except amiodarone

47- Right ventricular hypertrophy may be present in all of the following conditions except

- a) Cor pulmonale
- b) ASD
- c) **TS**
- d) MS

In Capsule Series

48- Which of the following is absolute contraindication to thrombolysis for an acute myocardial infarction?

- a) Menstruation finished 2 days previously
- b) Proliferative diabetic retinopathy
- c) Ischemic stroke 18 months previously
- d) Total hip replacement 7 days previously**

Notice that proliferative diabetic retinopathy is not an absolute contraindication, but a 'relative' one.

49- All of the following are associated with increased rates of myocardial infarction except

- a) Hemochromatosis**
- b) SLE
- c) Antiphospholipid syndrome
- d) Kawasaki disease

Hemochromatosis can result in a cardiomyopathy, but not MI

50- Cardiac tamponade may occur with all except

- a) Tuberculosis
- b) Rheumatic fever**
- c) Rheumatoid arthritis
- d) Uremia

51- Coarctation of the aorta

- a) Is more common in women
- b) Is associated with rib notching all 12 ribs on the left
- c) Rarely causes problems in pediatric life
- d) Is associated with cerebral aneurysm**

- Notching of ribs 3-8 is seen
- Coarctation can cause heart failure in the neonate.
- Stroke may result from hypertension or from associated berry aneurysm

In Capsule Series

48- Which of the following is absolute contraindication to thrombolysis for an acute myocardial infarction?

- a) Menstruation finished 2 days previously
- b) Proliferative diabetic retinopathy
- c) Ischemic stroke 18 months previously
- d) Total hip replacement 7 days previously**

Notice that proliferative diabetic retinopathy is not an absolute contraindication, but a 'relative' one.

49- All of the following are associated with increased rates of myocardial infarction except

- a) Hemochromatosis**
- b) SLE
- c) Antiphospholipid syndrome
- d) Kawasaki disease

Hemochromatosis can result in a cardiomyopathy, but not MI

50- Cardiac tamponade may occur with all except

- a) Tuberculosis
- b) Rheumatic fever**
- c) Rheumatoid arthritis
- d) Uremia

51- Coarctation of the aorta

- a) Is more common in women
- b) Is associated with rib notching all 12 ribs on the left
- c) Rarely causes problems in pediatric life
- d) Is associated with cerebral aneurysm**

- Notching of ribs 3-8 is seen
- Coarctation can cause heart failure in the neonate.
- Stroke may result from hypertension or from associated berry aneurysm

52- Chest pain most commonly occurs in

- a) MS
- b) AI
- c) AS
- d) TI

53- Digoxin toxicity is more likely with

- a) Hyperkalemia
- b) Hypocalcemia
- c) Hypomagnesemia
- d) Spironolactone

Hypokalemia, hypomagnesemia & hypercalcemia worsen digitalis toxicity.

54- Which of the following factors is most suggestive of a diagnosis of aortic dissection?

- a) Profound vomiting prior to pain
- b) History of syphilis
- c) Down's syndrome
- d) Hypotension

Dissection of the aorta is associated with hypertension, cocaine abuse, trauma & syphilis.

By association with coarctation, it is also associated with Turner's, but not with Down's syndrome.

55- Ventricular septal defect is associated with

- a) Pansystolic murmur once Eisenmenger's syndrome has occurred
- b) Lithium exposure in utero
- c) Aortic regurge
- d) Heart failure on the first day of life

- The murmur disappears with the onset of Eisenmenger's syndrome as pressures equalize.
- Sub-aortic VSD is associated with AR
- Lithium exposure during development is associated with Ebstein's anomaly (Tricuspid regurge)

56- What is the most appropriate initial management of propranolol toxicity?

- a) IV atropine
- b) IV adrenaline
- c) IV glucagon
- d) IV ciprofloxacin

Glucagon is the drug of choice for beta-blocker toxicity. It stimulates production of cAMP through non-adrenergic pathways, resulting in enhanced myocardial contractility, heart rate, and atrio-ventricular conduction.

57- Signs of cardiac tamponade include all of the following except

- a) Paradoxical pulse
- b) Hypotension
- c) Pericardial knock
- d) Tachycardia

Pericardial knock occurs in constrictive pericarditis. It is High pitched early diastolic sound due to sudden halting of the relaxing ventricles by rigid pericardium.

58- Reversed splitting second heart sound occurs in all of the following except

- a) LBBB
- b) AS
- c) ASD
- d) Systemic hypertension

59- Which of the following is an obligatory sign of malignant hypertension

- a) Renal failure
- b) Papilledema
- c) Heart failure
- d) Arterio-venous crossing changes

- Accelerated hypertension : Ac3lated - grade 3 retinopathy

- Malignant hypertension : hypertensive crisis with grade 4 retinopathy (papilledema)

60- A hypertensive patient showing a hypertensive crisis in response to propranolol most probably has :

- a) Pheochromocytoma
- b) Conn's syndrome
- c) Renovascular hypertension
- d) None of the above

61- All of the following are used in the treatment of severe left ventricular failure except:

- a) Disopyramide
- b) Nitroprusside
- c) Dobutamine
- d) Mechanical ventilation

Disopyramide is class 1a antiarrhythmic drug & has a negative inotropic effect. Antiarrhythmic drugs are generally -ve inotropic and should be avoided as possible.

Dr. Ahmed Mowafy

الذي يرحون بالدموع يحدود بالابتهاج
انظروا إلى الأجيال القديمة وتأملوا. هل توكك أحد على الرب فخري؟
الذي بدأ معك أول الطريق له يترك في منتصفه
هو شاف هو عارف مش ينسى ☺